

## USING REAL-WORLD DATA TO ANSWER REAL-WORLD QUESTIONS: UNDERSTANDING AND EVALUATING TREATMENT SEQUENCING IN METASTATIC COLORECTAL CANCER

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### Background

The wide range of possible treatment combinations and sequences for metastatic colorectal cancer (mCRC) presents a major challenge to clinicians.

### Objectives

We used real-world Australian registry data in a visualization tool to improve understanding of treatment complexity, and in a simulation model to estimate effectiveness of different treatment strategies.

### Methods

Interactive Sankey and Sunburst diagrams, customizable based on patient and disease characteristics, visualized real-world variation in treatment sequences. To reflect patient heterogeneity, multivariable survival and logistic regression models predicted progression-free and overall survival in a discrete event simulation. Models' discrimination and calibration were assessed, predicted and observed medians and Kaplan-Meier plots were compared, and probabilistic analysis was performed.

### Results

Of 2694 patients, 2057 (76%) started first-line treatment with chemotherapy or a biological agent, 1087 (40%) and 428 (16%) received second and third-line therapy, respectively. After recoding treatment to the most intensive chemotherapy and first exposed biological, 472 unique sequences were observed. Models showed reasonable discrimination and good calibration, except for short-term predictions. Simulated medians and Kaplan-Meier plots matched those observed well. Exploratory analyses estimated that median progression-free survival (95% confidence interval) may have been further improved from 265 days (248, 280) to 288 days (270, 307) by targeting a different treatment for 219 (25%) patients.

### Conclusions

Data visualization tools have potential to define variation in treatment practice and to identify opportunities to improve care and outcomes. Ultimately, clinicians and health system providers may use such tools and health economic simulation modeling techniques to improve the delivery of personalized cancer care.